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On the Fishes of the Genus Chromis (Family Amphiprionidae, Chromides, Pisces), Found in the Waters of Japan

By

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On the Fishes of the Genus Chromis (Family Amphiprionidae, Chromides, Pisces), Found in the Waters of Japan

(With 1 Plate)

By

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In the present paper is given a review of fishes of the genus Chromis found in the waters of Japan. After the war-caused fire in 1945, I have collected many specimens of the genus Chromis from various localities of Kōchi Prefecture, Amami-Ōshima of Kagoshima Prefecture and so on. Of these specimens one species seems to be new to the fauna of Japan, and two to the science.

All species of this genus are more or less rarely seen in Japan. They are marine reef fishes of the tropical Indo-Pacific and Atlantic Oceans, Red and Mediterranean Seas. In the following descriptions the standard length is measured from the anterior end of upper jaw to the base of uppermost caudal ray. Color notes all refer to material in formalin.

Chromis CUVIER, 1814

Chromis CUVIER, Bull. Soc. Philom. Paris, 1814, p. 68; type, *Sparus chromis* LINNAEUS.

Heliases CUVIER & VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 494; type, *Heliases insolatus* CUVIER & VALENCIENNES.

Heliastes LOWE, Trans. Zool. Soc. London, 1838, p. 177; Günther (1862), p. 160. Emend. *Haliases* CUVIER & VALENCIENNES.

Furcaria POEY, Memorias Hist. Nat. Cuba, vol. 2, 1860, p. 194; type, *Furcaria puncta* POEY.

Ayresia COOPER, Proc. California Acad. Sci., 1863, p. 73; type, *Ayresia punctipinnis* COOPER.

Hoplochromis FOWLER, Proc. Acad. Nat. Sci. Philad., 1918, p. 66; type, *Heliases caeruleus* CUVIER & VALENCIENNES.

Body compressed, oblong or ovate, the depth two-fifths to two-thirds the length of the body without caudal. None of opercular bones serrate. Lateral line usually ends below soft dorsal, sometimes a separate series of tubular scales on caudal peduncle. Mouth small; teeth conic, villiform or subcylindrical, irregular series, none on vomer. Scales rather large, 20 to 30 in a longitudinal series. Head perfectly scaly, leaving a small naked area around nostrils; opercle with three regular rows of scales, without additional scales. Dorsal fin with 12 to 14 spines (very rarely 11) and 9 to 15 soft rays; anal fin with 2 spines and 9 to 14 soft rays; caudal more or less forked, the lobes rounded or acute. Branchiostegals normally 5; pyloric appendages 2 or 3, verely rarely 1; vertebrae

25 to 27. Gill rakers long and slender, 22 to 35.

Key to the Japanese species of Chromis

Species marked with an asterisk are those which I have never found from Japan.

a^1……Dorsal spines 14

b^1……Second anal spine shorter than head without snout. Color brownish yellow; spinous dorsal blackish at the margin……*mirationis*

b^2……Second anal spine about as long as head without snout. Color dark chocolate brown; each base of scale showing paler……*albomaculatus*, n. sp.

a^2……Dorsal spines 13.

c^1……Second anal spine long, as long as head without snout.

d^1……Back light brown, sides and lower surface light yellow……*analis*

d^2……Brownish violet; posterior part of body abruptly yellowish in contrast with body……*isharae*

c^2……Second anal spine short, slightly longer than half the length of head.

e^1……Side of body with two black longitudinal bands……**bitaeniatus*

e^2……Body without any black longitudinal bands.

f^1……Brownish violet; pectoral base with conspicuous large black blotch.

g^1……Each caudal lobe without a longitudinal band……*notatus*

g^2……Each lobe of caudal with a dark longitudinal band……*flavomaculatus*, n. sp.

f^2……Brownish, without any conspicuous blotch at pectoral base.

h^1……A dark stripe along anterior border of opercle……*xanthochir*

h^2……Yellowish brown, below paler; obscure small brown spot at pectoral base……*cinerascens*

a^3……Dorsal spines 12

i^1……Spinous dorsal naked; a short bluish streak across preorbital. External outwardly directed conic teeth in mandible……*caeruleus*

i^2……Spinous dorsal scaly; no bluish streak across preorbital. Teeth in jaws not directed or flaring outward.

j^1……Upper and lower margins of caudal blackish in contrast with the rest of fin.

k^1……Anterior profile of head broadly rounded. Ventral pale……**ternatensis*

k^2……Anterior profile of head more angular. Ventral black……*atripes*

j^2……Without distinct longitudinal band on each caudal lobe.

l^1……Body ovate. Color yellowish olive, without any markings……**ovatiformis*

l^2……Color dusky brown; posterior half of rayed dorsal, posterior third of anal, caudal peduncle and caudal whitish; pectoral with large dark basal blotch……*dimidiatus*

1. *Chromis mirationis* TANAKA Tōkai-suzumedai

Chromis mirationis TANAKA, Zool. Mag., Tōkyō, 29, 1917, p. 8. Off Gotō, Nagasaki Pref. —KAMOHARA, Zool. Mag., Tōkyō, 46, 1934, p. 459. Mimase, Kōchi City. —AOYAGI, Trans. Biogeogr. Soc. Japan, 4, no. 1, 1941, p. 178. —KAMOHARA, Repts. Kōchi Univ., Nat. Sci., no. 3, 1952, p. 53. Mimase, Kōchi City.

D. XIV, 13; A. II, 12; scales in longitudinal series 27; tubes in lateral line 18. Head 3 in length; depth 2.1; eye 2.6 in head; snout 5.1; interorbital 3.1; depth of caudal peduncle 2.4. Eyes large; outer ray of ventral somewhat produced. Second anal spine equals distance between hindborder of opercle and middle of pupil. Color brownish yellow; spinous dorsal blackish at the margin; ventral and anal slightly grayish; axil of pectoral blackish.

Described from a specimen, 119 mm long (Cat. No. 1537), from Mimase, Kōchi City, January 13, 1952. Two specimens, 75 and 100 mm in total length, which had been deposited in my laboratory, taken off Kōchi Pref., were destroyed by a war-caused fire in 1945.

Kōchi Pref. to Gotō, Nagasaki Pref.

2. *Chromis albomaculatus*, n. sp. New Japanese name: Shiroboshi-suzumedai (Fig. 1)

D. XIV, 12; A. II, 12; P. 19; scales in longitudinal series 27; tubes in lateral line 17; pores in straight section unrecognizable; 3 scales above lateral line; 10 below. Cheek with three rows of scales, and one more row of scales; three rows of scales on opercle. Gill rakers on first arch $5^{+}+17$ (right), $5^{+}+16$ (left). Head 3.2 in length; depth 1.8; eye 3.1 in head; snout 4.3; interorbital 2.9; depth of caudal peduncle 2.

Body short, very deep, ovate, much compressed; head as deep as long; snout short, blunt. Maxillary reaching to below frontborder of eye. Scales on upper part of head reaching beyond nostrils. First dorsal spine much less than eye, 8 th to 10 th spines longest, subequal to snout and eye together; posterior spines scarcely shorter. Soft dorsal pointed, the longest ray equals distance between hindborder of opercle and frontborder of pupil. Second anal spine very large, about as long as head without snout; soft anal somewhat pointed; ventrals rather long, the outer ray produced, somewhat shorter than head, not reaching anal; caudal deeply forked, the lobes pointed, the upper one somewhat filamentous.

Color dark chocolate brown, slightly lighter below, and darker on head; bases of scales showing paler. All fins except pectoral blackish; pectoral translucent, axil black; posterior parts of soft dorsal, anal and caudal pale.

Described and figured from a single specimen, 172 mm in length (Cat. No. 7487), from Kasiwajima, October 15, 1957. This is related to *Chromis veraster* JORDAN & METZ from Honolulu, but differs from it in having 17 tubes in lateral line instead of 18, longer second anal spine, more deeply forked caudal and different coloration.

The dimensions of one other specimen, 142 mm in length (Cat. No. 8514), from Okinoshima, Kōchi Pref., June 8, 1959 is read as follows: D. XIV, 13; A. II, 13; P. 19; scales in longitudinal series 27; tubes in lateral line 17; pores in straight section unrecognizable; 3 scales above lateral line, 10 below. Gill rakers on first arch $4^{+}+18$. Head 3.5 in length; depth 1.8; eye 3 in head; snout 4; interorbital 2.6; depth of caudal

peduncle 1.9.

3. *Chromis analis* (CUVIER & VALENCIENNES) Shiri-suzumedai

Heliases analis CUVIER & VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 496. Amboina.
Heliases macrochir BLEEKER, Nat. Tijds. Ned. Indie, vol. 5, 1853, p. 246. Amboina.
Chromis analis BLEEKER, Atlas Ichth., vol. 9, 1878, pl. 405, fig. 1. —AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (1), 1941, p. 178. Okinawa-Hontō.

D. XIII, 12; A. II, 11; scales in longitudinal series 26; tubes in lateral line 16; 3 scales above lateral line, 10 below; gill rakers on first arch 6+18—20. Head 3.1—3.3 in length; depth 1.9; eye 2.5—3.2 in head; snout 4.1—5; interorbital 2.5—3.1; depth of caudal peduncle 2.1—2.4. Second anal spine equals distance between hindborder of opercle and frontborder of pupil. Color light brown, sides and lower surface of body light yellowish. Base of spinous dorsal brown, all fins otherwise yellowish; small pale brown spot at pectoral origin.

Described from three specimens, 125 (Cat. No. 7488), 132 (Cat. No. 8515) and 145 (Cat. No. 8516) mm long, from Okinoshima, Kōchi Pref.

Wakayama Pref. to the E. Indies; Melanesia and Polynesia.

4. *Chromis isharae* (SCHMIDT) Amami-suzumedai

Dascyllus isharae SCHMIDT, Trans. Pac. Comm. Acad. Sci., USSR, vol. 1, 1930, p. 67, fig. 2. Kominato, Amami-Ōshima.
Chromis isharae OKADA & IKEDA, Trans. Biogeogr. Soc. Japan, 3, 1939, p. 196. Itoman, Okinawa-Hontō. —AOYAGI, Ibid., 4 (1), 1941, p. 179. Okinawa-Hontō. —KAMOHARA, Repts. Kōchi Univ., Nat. Sci., 2, 1952, p. 4. Okinoshima, Kōchi Pref. —KAMOHARA, Repts. Usa Mar. Biol. Sta. 4 (1), 1957, p. 38. Amami-Ōshima.

D. XIII, 13—14; A. II, 13; scales in longitudinal series 26; tubes in lateral line 17; 3 scales above lateral line; gill rakers on first arch 10+20. Head 3.5—3.8 in length; depth 1.9; eye 2.9—3.1 in head; snout 4—4.3; interorbital 2.3—2.5; depth of caudal peduncle 1.9—2. Body very deep; head small, its length about equal to its height. Caudal deeply incised. Second anal spine about as long as head without snout; rays of anal reaching to base of caudal. Color brownish violet; posterior part of body, viz., caudal peduncle, posterior dorsal and anal, and caudal, abruptly yellowish in contrast with body. Spinous dorsal, anterior part of anal, and ventral blackish; pectoral gray, with a large black blotch at the base; each lobe of caudal margined with a narrow brown longitudinal band.

Described from two specimens, 158 + (Cat. No. 8576) and 175 (Cat. No. 8575) mm in length, from Okinoshima, Kōchi Pref., August 15, 1953.

Kōchi to Miyako Island, Riu Kiu.

5. *Chromis bitaeniatus* FOWLER & BEAN Futaobi-suzumedai

Chromis bitaeniatus FOWLER & BEAN, Smiths. Inst. U. S. Nat. Mus., Bull. 100, vol. 7, 1928, p. 56, pl. 6. Philippines. —AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (1), 1941, p. 180. Okinawa-Hontō.

No specimens at hand.

Okinawa-Hontō to the Philippines.

6. *Chromis notatus* (TEMMINCK & SCHLEGEL) Suzumedai

Heliases notatus TEMMINCK & SCHLEGEL, Fauna Jap., Pisces, 1842, p. 66. Nagasaki.

Chromis notatus JORDAN & SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 358. Tōkyō. —AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (I), 1941, p. 181. Miyako Island and Okinawa-Hontō. —KAMOHARA, Repts. Usa Mar. Biol. Sta., 4 (I), 1957, p. 38. Amami-Ōshima.
Chromis villadolidi JORDAN & TANAKA, Ann. Carneg. Mus., vol. 17, nos. 3—4, 1927, p. 387. Sea of Japan between Tsushima and Fukuoka.

D. XIII, 11—12; A. II, 11—12; scales in longitudinal series 26; tubes in lateral line 18; 3 scales above lateral line, 9—10 below; gill rakers on first arch 9+20—21. Head 3.2—3.4 in length; depth 2.2—2.4; eye 3—3.3 in head; snout 4.5—4.7; interorbital 3—3.3; depth of caudal peduncle 2.1—2.3. Second anal spine equals distance between hindborder of opercle and middle point of pupil. Color brownish violet, paler below; dorsal and anal blackish, both having the posterior pale portion. A large black blotch at the pectoral base and a white blotch at the bases of last dorsal rays. These blotches serve to distinguish this species at once from any other member of the group known to me.

Many specimens, 115 to 145 mm long, from various localities of Kōchi Pref., Amami-Ōshima etc. Described from two specimens, 115 (Cat. No. 4946) and 145 (Cat. No. 8513) mm in total length.

Chiba Pref. and Niigata to Korea and China.

7. *Chromis flavomaculatus*, n. sp. New Japanese name: Kihoshi-suzumedai (Fig. 2)

D. XIII, 13; A. II, 12; P. 19; scales in longitudinal series 26; tubes in lateral line 17; pores in straight section 8, hardly recognizable; 4 scales above lateral line; 12 below. Cheek with 5 rows of scales; three rows of scales on opercle. Gill rakers on first arch 7+18. Head 3.3 in length; depth 1.9; eye 2.8 in head; snout 6.4; interorbital 2.8; depth of caudal peduncle 2.

Body short, deep, ovale, much compressed; head as deep as long; snout short; maxillary reaching to below frontborder of eye. Scales on upper part of head reaching beyond nostrils. Eye-diameter subequal to interorbital space. First dorsal spine much less than eye, 7 th spine longest, subequal to snout and eye together; posterior spines scarcely shorter. Soft dorsal pointed, the longest ray equals distance between bindborder of opercle and frontborder of pupil. Soft anal somewhat rounded; second anal spine very large, equals distance between hindborder of opercle and hindborder of pupil. Ventrals rather long, the outer ray produced, somewhat shorter than head, not reaching to anal. Caudal deeply forked, the lobes pointed, the upper lobe a trifle the longer.

Color brownish violet, lighter below; each scale of sides of body with a yellowish spot; dorsal and anal blackish, both having the posterior pale portion. Pectoral and ventral pale; a large black blotch at the pecoral base and a black saddle-like blotch, smaller than pupil, on caudal peduncle, immediately behind last dorsal ray. Caudal pale; each lobe with a broad dark longitudinal band leaving narrow white margin.

Described and figured from a single specimen, 116 mm in length (Cat. No. 8482), from Susaki, Kōchi Pref., May 19, 1959.

This is related to *Chromis notatus* (TEMMINCK & SCHLEGEL) in having a large black blotch at the pectoral base, but differs from it in having 4 scales instead of 3 above lateral line, 17 tubes instead of 18 in lateral line, yellow spot on each scale of sides of

body and a black saddle-like blotch on caudal peduncle.

The dimensions of one other specimen, 112 mm in length (Cat. No. 4944), from Tachibana, Tokushima Pref., October 24, 1955, is read as follows: D. XIII, 13; A. II, 11; P. 19; scales in longitudinal series 26; tubes in lateral line 17; pores in straight section 8; 4 scales above lateral line, 12 below. Head 3.1 in length; depth 2.1; eye 3 in head; snout 5.2; interorbital 3; depth of caudal peduncle 2.2.

8. *Chromis xanthochir* (BLEEKER) Kogane-suzumedai

Heliasses xanthochirus BLEEKER, Nat. Tijds. Ned. -Ind., vol. 2, 1851, P. 248. Banda Islands.

Heliastes xanthochir GÜNTHER, Cat. Fish. Brit. Mus., vol. 4, 1862, p. 62. Banda.

Chromis xanthochir BLEEKER, Atlas Ichth., vol. 9, 1878, pl. 402, fig. 5.—AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (I), 1941, p. 183.—KAMOHARA, Repts. Usa Mar. Biol. Sta., 4 (I), 1957, p. 38. Amami-Ōshima.

Chromis reticulatus FOWLER & BEAN, Smiths. Inst. U. S. Nat. Mus., Bull. 100, vol. 7, 1928, p. 40. Philippines.

Chromis weberi FOWLER & BEAN, Ibid., p. 41, pl. 1. Philippines and Java.

D. XIII, 11; A. II, 10; scales in longitudinal series 26; tubes in lateral line 18; gill rakers on first arch 9+19. Head 3.7 in length; depth 2.1; eye 2.9 in head; snout 3.8; interorbital 2.9; depth of caudal peduncle 1.9. Snout short, about three-fourths of eye. Second anal spine equals distance between hindborder of opercle and middle point of pupil; ventrals with the first ray filamentous; caudal deeply forked, the lobes pointed. Color brownish; a dark stripe along anterior border of opercle; hind preopercle edge narrowly dusky down to gill opening. Dorsal and anal brownish, the posterior dorsal and anal rays white. Median caudal rays light, the lobes brownish.

Described from a specimen 114 mm long (Cat. No. 7122), from Okinoshima, Kōchi Pref.

Kōchi Pref. to the Philippines and the E. Indies.

9. *Chromis cinerascens* (CUVIER & VALENCIENNES)

New Japanese name: Kiiro-suzumedai

Heliases cinerascens CUVIER & VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 495. Java.—BLEEKER, Atlas Ichth., vol. 9, 1878, pl. 407, fig. 1.

Chromis insulindicus BLEEKER, Versl. Akad. Amsterdam, ser. 2, vol. 10, 1877, p. 390. Amboina.—BLEEKER, Atlas Ichth., vol. 9, 1878, pl. 403, fig. 3.

D. XIII, 12; A. II, 12; scales in longitudinal series 26; tubes in lateral line 18; 3 scales above lateral line, 9 below; gill rakers on first arch 8+19. Head 3.2—3.3 in length; depth 1.9—2; eye 2.8—3 in head; snout 3.8—4.1; interorbital 2.4—2.8; depth of caudal peduncle 2.1—2.2. Maxillary reaching vertical through frontborder of eye. First dorsal spine much less than eye, following increasing in length to the 7 th spine, about equal to snout and eye together. Second anal spine equals distance between hindborder of opercle and hindborder or middle point of pupil; Ventrals with the first ray filamentous, as long as head; caudal deeply forked, the upper lobe the longer. Color yellowish brown, below pale; head brownish; all the fins yellow; obscure small brown spot at pectoral base; caudal uniform yellowish.

Described from three specimens, 153 (Cat. No. 7161), 164 (Cat. No. 8554) mm long from Susaki and 168 (Cat. No. 7486) mm in length from Kashiwajima, Kōchi Prefecture. Fowler & Bean (1928) who examined a large number of specimens, came to the

conclusion that the variation of their series of *cinerascens* exceed the variant Bleeker attempted to establish as *Chromis insulindicus* which has 14 dorsal spines.

Hitherto known from the Philippines to India.

10. *Chromis caeuleus* (CUVIER & VALENCIENNES) Deba-suzumedai

Heliases caeruleus CUVIER & VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 497. New Guinea and Ulea.

Chromis caeruleus AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (1), 1941, p. 186. Riu Kiu Islands. —KAMOHARA, Repts. Usa Mar. Biol. Sta., 4 (1), 1957, p. 38, Amami-Ōshima.

D. XII, 10; A. II, 9; scales in longitudinal series 25; 2 scales above lateral line. Head 3.3 in length; depth 1.9; eye 3 in head; snout 5.2; interorbital 2.6; depth of caudal peduncle 2.1. Dorsal and anal naked, except very few inconspicuous basal scales. External outwardly directed conic teeth in mandible. Color violet blue, lighter below; each scale with a pale bluish spot; pectoral with a blackish axillary spot.

Described from a single specimen, 97 mm long (Cat. No. 5331), from Kasari, Amami-Ōshima.

Amami to Africa; Australia and Polynesia.

11. *Chromis ternatensis* (BLEEKER) Kaburaya-suzumedai

Heliases ternatensis BLEEKER, Nat. Tijd. Ned. Ind., vol. 10, 1856, p. 377. Ternate.

Chromis ternatensis BLEEKER, Atlas Ichth., vol. 9, 1878, pl. 403, fig. 4. —AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (1), 1941, p. 183. Miyako Island.

Chromis philippinus FOWLER, Proc. Acad. Nat. Sci. Philad., 1918, p. 63, fig. 25. Philippines.

No specimens at hand.

Riu Kiu to the E Indies.

12. *Chromis atripes* FOWLER & BEAN Nettai-suzumedai

Chromis atripes FOWLER & BEAN, Smiths. Inst. U. S. Nat. Mus., Bull. 100, vol. 7, 1828, p. 43, pl. 2. Philippines; Celebes and Ternate. —KAMOHARA, Zool. Mag., Tōkyō, vol. 45, 1933, p. 243. Okinoshima, Kōchi Pref.

A single specimen, 100 mm in length, from Okinoshima, Kōchi Pref., was destroyed by a war-caused fire in 1945.

Wakayama Pref. to the E. Indies.

13. *Chromis ovatiformis* FOWLER Maru-suzumedai

Chromis ovatiformis FOWLER, Proc. Acad. Nat. Sci. Philad., vol. 98, 1946, p. 142 figs. 11—12. Aguni Shima, Riu Kiu Islands.

No specimens at hand.

Riu Kiu.

14. *Chromis dimidiatus* (KLUNZINGER) Shikoku-suzumedai

Heliastes dimidiatus KLUNZINGER, Verh. Zool. Bot. Ges. Wien, vol. 21, 1871, p. 529. Koseir, Red Sea.

Chromis dimidiatus AOYAGI, Trans. Biogeogr. Soc. Japan, 4 (1), 1941, p. 188. Miyako Island. —KAMOHARA, Repts. Usa Mar. Biol. Sta., 4 (1), 1957, p. 39. Wan, Kikaijima, Kagoshima Pref.

Chromis dimidiatus margaritifera FOLWLER, Proc. Acad. Nat. Sci. Philad., 48, 1946, p. 140, fig. 9. Aguni Shima, Riu Kiu Islands.

D. XII, 12; A. II, 13; scales in longitudinal series 26; tubes in lateral line 17; gill rakers on first arch 7 +18. Head 3.4 in length; depth 1.7; eye 2.4 in head; snout 3.4;

interorbirbital 2.4; depth of caudal peduncle 1.9. Second anal spine equals distance between hindoborder of opercle and frontborder of pupil. Color dusky brown; posterior half of rayed dorsal, posterior third of anal, caudal peduncle and caudal whitish. Pectoral brownish, base dusky, though the blotch not quite large as eye.

Described from a single specimen, 78 mm long (Cat. No. 5844), from Wan, Kikaijima, Kagoshima Pref.; specimens from Kōchi Pref. were destroyed by a war-caused fire in 1945.

Kōchi Pref. to Red Sea; Africa; Polynesia and Hawaii.

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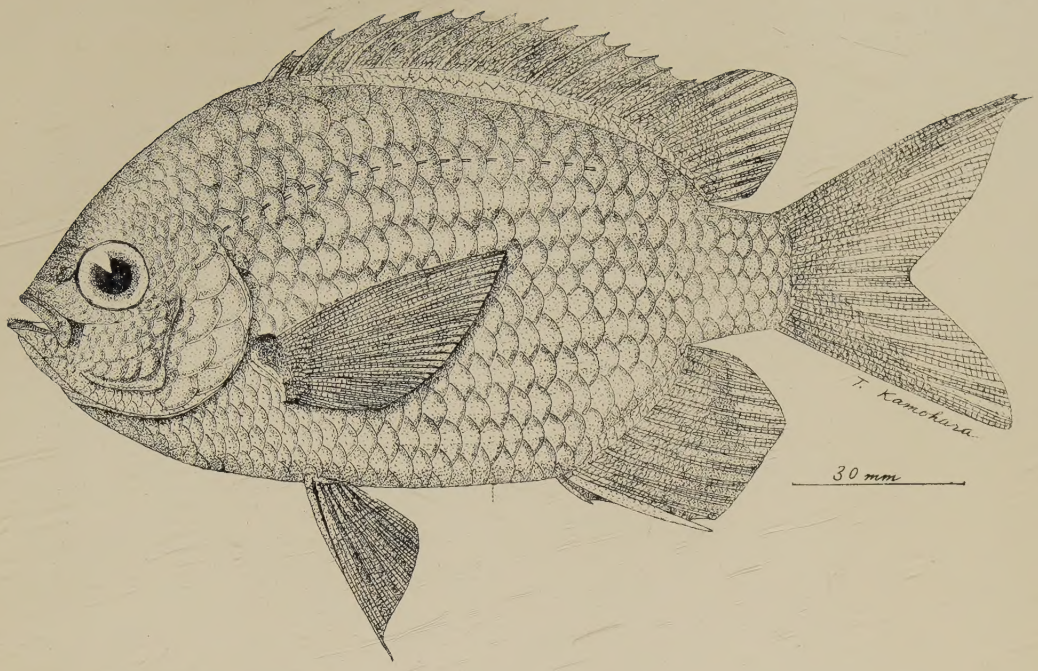

Fig. 1 *Chromis albomaculatus*, n. sp.

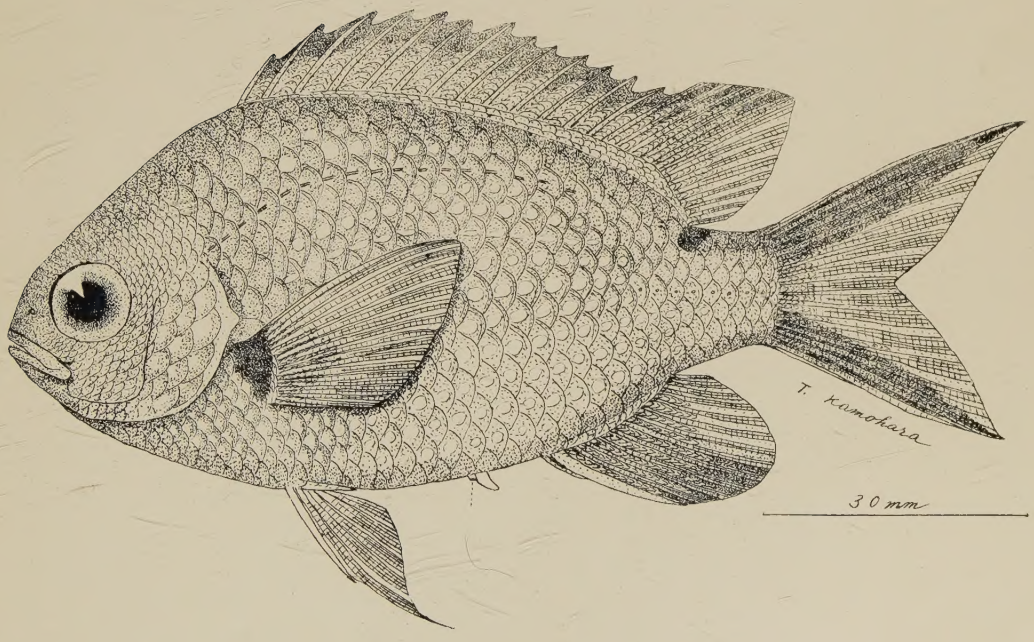

Fig. 2 *Chromis flavomaculatus*, n. sp.

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